UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

February 26, 2015

Naren M. Prasad, P.E.
Senior Environmental Engineer
Integerys Business Solutions, LLC
200 East Randolph Drive, 24th Floor
Chicago, Illinois 60601

Re: Administrative Order on Consent
NSG South Plant Former MGP
Draft Focused Feasibility Study Report (Rev. 1)

Dear Mr. Prasad:

The U.S. Environmental Protection Agency (EPA), with assistance from the Illinois Environmental Protection Agency (IEPA), reviewed the subject report, dated February 9, 2015, regarding the NSG South Plant Former MGP site in Waukegan, IL. Our comments are attached. On a separate submittal, we are also providing you suggested changes to Section 6.2 and Figure 16. Please revise the document accordingly and submit the revised report to us within 30 days of receipt of this letter. If you would like to request a meeting prior to submission of the revised report, please contact our office as soon as practicable.

Your attention on this matter is appreciated. If you have any questions, I can be reached at (312) 886-6195.

Sincerely,

R. del Rosario

Ross del Rosario
RPM

Enclosures

cc: Paul Lake, IEPA
Dave Klatt, CH2M Hill

NSG South Plant Former MGP
FFS Revision 1 Comments

In Reference to Previous USEPA FFS General Comment #4 and IBS's Response:

The IBS response is acceptable. However, it is noted for future design reference that the cited concentration value for the design is more than 25,000 times greater than the reported solubility of BaP in water. In light of this response and the unlikely scenario that extracted groundwater would contain BaP at this concentration during implementation of remedies D5, D6 or D7, it may be more realistic to base the influent concentration used for alternative design on the solubility of the compounds detected.

In Reference to Previous USEPA FFS General Comments #7 and #8 and IBS's Response:

The reference at the top of page 4 should be 6.1, instead of 6.2.2. In addition, the reference in the middle of page 4 should be 6.1, instead of 6.3. Please check the rest of the document for correct references to section 6.1 and 6.3 as it appears changes in section numbering within Section 6 led to incorrect references.

In Reference to Previous USEPA FFS General Comment #8 and IBS's Response:

The current approach is acceptable for FFS purposes. However, it is noted for future design consideration that the proposed design concept may result in the truncation of DNAPL flow paths to the recovery line. If the DNAPL level in the collection sump is maintained below the drain line invert, water will be preferentially recovered due to viscosity differences between the two fluids. To maximize DNAPL recovery with the passive system, DNAPL sump level should be maintained at the highest elevation possible with small, and more frequent extraction cycles. The ideal situation is where DNAPL is removed from the line as fast as it accumulates. This will impart a slow (but continuous) depletion of the DNAPL pool. Batch pumping, as proposed, may fracture DNAPL flow paths and result in the immobilization of DNAPL in the areas around the recovery well.

In Reference to Previous USEPA FFS General Comment #10 and IBS's Response:

IBS comments noted. The issue of evaluating and monitoring the potential spread of NAPL during the stepped remedial approach should be addressed in the RD.

In Reference to Previous USEPA FFS Specific Comment #1 and IBS's Response:

As is specified in the revised FFS Section 4.5.2, it is requested that the DNAPL pre-design investigation take place before implementation of Option D4. Figure 16 should be modified accordingly to show the pre-design DNAPL investigation occurring before implementation of option D4, and language in Sections 6.3 and related Section 6.2 should be clarified to reflect the pre-design investigation.

Pre-design investigations should be done as soon as possible to provide an updated baseline of DNAPL presence, mobility, thickness, and volume which will assist in not only locating horizontal wells, but also in providing information that will allow better assessment of DNAPL presence across the site. The details of the pre-design investigation can be provided in the planning phase, however, Integrys should plan to integrate analytical approaches to measure pore fluid saturation, interfacial tension, and mobility thresholds in the subsurface that could provide important information for

system design. These approaches, if applied before and after remediation phases, could be very useful in demonstrating how the system was performing (along with operational data observations).

Figure 16 Additional Comments:

See attached recommended changes to Figure 16.

STEP 1. Draft versions of this figure presented on January 8 indicated that field monitoring (i.e., a measureable decrease as illustrated by monitoring) would serve as the decision metric. However, the revised Figure 16 includes a metric which is undefined and appears insufficient for decision making purposes (See proposed modifications to Figure 16).

STEPS 1-3. The current decision flow did not appear to allow the process to continue to the next step after 2 years (See proposed modifications to Figure 16).

In Reference to Previous USEPA FFS Specific Comment #3 and IBS's Response:

IBS comments noted. The issue of evaluating potential reactive gate approaches can be considered as part of a future site-wide FS.

In Reference to Previous USEPA FFS Specific Comment #5 and IBS's Response:

Implementation of a containment only option (D3) does not meet the NCP expectation for addressing principal threat wastes, and therefore cannot fully meet ARARs as currently noted in Table 5. Section 4.4.4 and Table 5 should be revised to indicate that ARARs are only partially met under Option D3. EPA recognizes that engineering controls, which a vertical engineered barrier is, for the containment of principal threat waste may be used when treatment is considered impractical. However, NAPL treatment at this site is not considered impractical at this time, so removal/treatment options are prioritized for this interim DNAPL remedy.

In Reference to Previous USEPA FFS Specific Comment #7 and #8 of IBS's Response:

While it would be helpful to see estimated volumes of DNAPL removed by each approach under the assumed implementation efficiencies to better evaluate the benefits and shortfalls of each alternative, the revisions to Section 4.5.2 and 4.6.2 and the qualitative discussions in Sections 4.5.6, 4.6.6., and 4.7.6 are acceptable at this time. However, as noted in item #5 (Response to Specific Comment #1), implementation of the DNAPL pre-design investigation is recommended as soon as possible in the pre-design phase before implementation of Option D4 (if it is selected) in order to provide an updated baseline of DNAPL presence, mobility, thickness and overall volume.

In Reference to Previous USEPA FFS Specific Comment #9 and IBS's Response:

The response and FFS language revisions regarding horizontal well spacing is acceptable, as noted above. However, for future remedial design consideration, CH2M HILL suggests that Integrys consider modifying the well installation approach as presented on the conceptual cross section on Figure 13. Specifically, it is recommended that Integrys consider the use of repeating well pairs that are installed at each location just like the center well set shown in the conceptual cross section on Figure 13. Installation of separate lines will allow seamless conversion from Option D4 to Option D5. Each well pair would be considered as injection/extraction well pairs, rather than the more limiting single injection wells. By using dual lines, the upper and lower lines can be used for any purposes (injection or extraction) and add more flexibility to operation of the system. Injecting water

into the DNAPL zone may not be preferable, but injecting groundwater in the upper line above the DNAPL results in a mound which may be more efficient at displacing DNAPL to the recovery point than simply trying to flush it there. Conversely, in the surfactant remedial case, you would want it to be injected in the DNAPL zone. Therefore, the paired well approach allows provisions to inject and extract, as necessary.

In Reference to Previous USEPA FFS Specific Comment #15 (Section 6.2 Performance Standard) and IBS's Response:

Revised language in Section 6.2 retains thickness measurement as the overall metric for remedy success and extraction operation completion (1 inch or less). The decline curve serves as the basis for when a DNAPL recovery effort is exhausted. We suggest that both requirements must be achieved before the remedy is considered complete, with the decline curve taking precedent, because the measurements are more repeatable. In the interest of streamlining this comment and expediting completion of the FFS document, revised text (in track changes mode) has been prepared for EPA consideration. Please see attached document entitled "Recommended Revisions to FFS Section 6.2 Performance Standard".

In Reference to Previous USEPA FFS Specific Comment #18 (Appendix B Remedial Option Cost Estimates) and IBS's Response:

The following items are noted predominantly for future remedial design considerations. No changes are necessary to finalize the FFS, unless the comment significantly modifies the cost of one option against the other options.

D3. Package GW treatment plant installation startup and testing costs seem low. No costs are shown for conveyance piping of treated water to local POTW despite a subtitle indicating as such.

D4. Horizontal drain lines are to be installed through DNAPL impacted areas. The assumption for IDW disposal (T&D) as non-hazardous may not be realistic. A provision for a percentage of hazardous waste disposal costs would seem appropriate, especially since it appears that current DNAPL is managed as RCRA hazardous waste.

D4. Drain line maintenance (jetting) may be highly disruptive to DNAPL recovery efforts (flow path truncation). Consider removal of this line item.

D4. The estimate structure makes it very difficult to see what components of the remedy are needed for the alternative and what components are needed for expansion after year 2. Consider presenting details as part of extraction or injection system components if feasible.

D5. Costs for GW treatment plant installation and startup testing appear to be low. The system is described as a complex series of process units. Significant interconnections piping, electrical and process controls are also likely. Consider increasing this value to reflect time requirements of installing and starting a complicated treatment process.

D5. Typically about 20% of extracted GW in a flooding system is treated and disposed rather than re-injected. This approach helps to impart an inward gradient towards the treatment area. Consider integrating capital costs for conveyance and operations costs for discharge of treated groundwater to the local POTW.

D6. Integrate comments above for D5 groundwater treatment to D6.

Tables

Table 1: Remove the NCP as an ARAR. EPA generally doesn't include it in the ARAR tables. As the implementing regulation for the Superfund program, it cannot be waived.

Table 2. We note that all of the enhanced recovery options are a form of in-situ treatment using physical or chemical modifications. It may be more appropriate to group these remedial technologies under the In-situ treatment General response action rather than Ex-situ where currently presented.

New Comment:

Expand the discussion on Section 1.2.8.2 on what happens to the recovered DNAPL when it is received by the off-site facility (SET). Specifically, what characteristics justify the use of DNAPL as a fuel (e.g., energy content) and what process(es) does the TSD facility perform on the DNAPL leading to it being blended as fuel and used by local cement kilns. Lastly, please indicate in this section that the DNAPL is being categorized as a RCRA hazardous waste.

IEPA Comments:

1. Section 4.3, D2 - Institutional Controls, pages 26-27: Sufficient description is provided for institutional controls to prevent the use of groundwater as a drinking water source. However, more detail is indicated to describe how worker caution controls for the protection of future construction workers will be implemented and enforced, especially for impacted areas located on adjacent properties.

2. Section 4.5.2, D4 – Horizontal Well DNAPL Recovery: No discussion could be found in this section explaining how recovery system effluent (DNAPL and water) will be stored, treated and/or disposed. Please revise this section to describe the fate of effluent recovered from the horizontal well system. It is noted that the Alternative D4 cost estimate found in Appendix B assumes drumming the DNAPL/water and transport of these drums to facility (SET) in Houston, Texas.

3. Section 4.6.4, D5 - Compliance with ARARs, page 45: Regarding the conditions Illinois EPA has for potential re-injection of treated DNAPL/water as part of this interim action, please add the following as the final bullet on page 45, "The interim action will not be inconsistent with the final remedial action goal of remediating contaminated groundwater to Illinois' Class 1 Groundwater Quality Standards."

4. Section 4.8.2, D7 – Remedial Option Description, page 56: The text discusses the increased risk of vapor intrusion associated with the Thermally Enhanced Recovery options. At a minimum, increased soil vapor and potentially indoor air monitoring are indicated to ensure the protection of users of the Akzo facility buildings and the WPD Maintenance Building during implementation of this alternative. Accordingly, please revise this section and Section 4.8.7 (Short-Term Effectiveness) to include adequate soil vapor and/or indoor air monitoring for the protection of indoor workers as part of this remedial alternative.

5. Section 6, General: The stepped approach for South Plant is laid out in this section. Up to three of the remedial alternatives could be implemented. The first step would involve Horizontal Well DNAPL Recovery (D4), which is a passive technique. If recovery rates for D4 indicate enhanced recovery techniques should be implemented, then the recovery system would be

upgraded to Physically Enhanced DNAPL Recovery (D5) or water flushing. If deemed necessary, the infrastructure for D5 could be re-purposed to accommodate Chemically Enhanced DNAPL Recovery (D6). Implementation of D4 alone is estimated to achieve 95% total DNAPL recovery in approximately 31 years. The enhanced alternatives are expected to take considerably less time, 5 to 8 years, to achieve the same 95% reduction. As long as IBS demonstrates that it can meet the re-injection conditions identified by IEPA, selection of Alternative D5 is the preferred first step alternative for the State.

6. Table 1: IEPA is cognizant that the alternatives in this FFS only address the mass and mobility of principle threat MGP waste at the site, which is dense non-aqueous liquids (DNAPL). As such, no attempt at meeting Illinois' Groundwater Quality Standards (35 IAC 620) is contemplated for this interim action. Rather, restoring groundwater to beneficial use levels will occur as part of follow-on work once the principle threat waste has been addressed to the extent practicable. However, since the long-term goal is to meet the 35 IAC 620 standards, they should be listed as applicable chemical-specific applicable or relevant and appropriate requirements (ARARs), not "relevant and appropriate."